



# A Stronger More Resilient Los Angeles

February 28, 2014

Jonathan Parfrey • Climate Resolve

























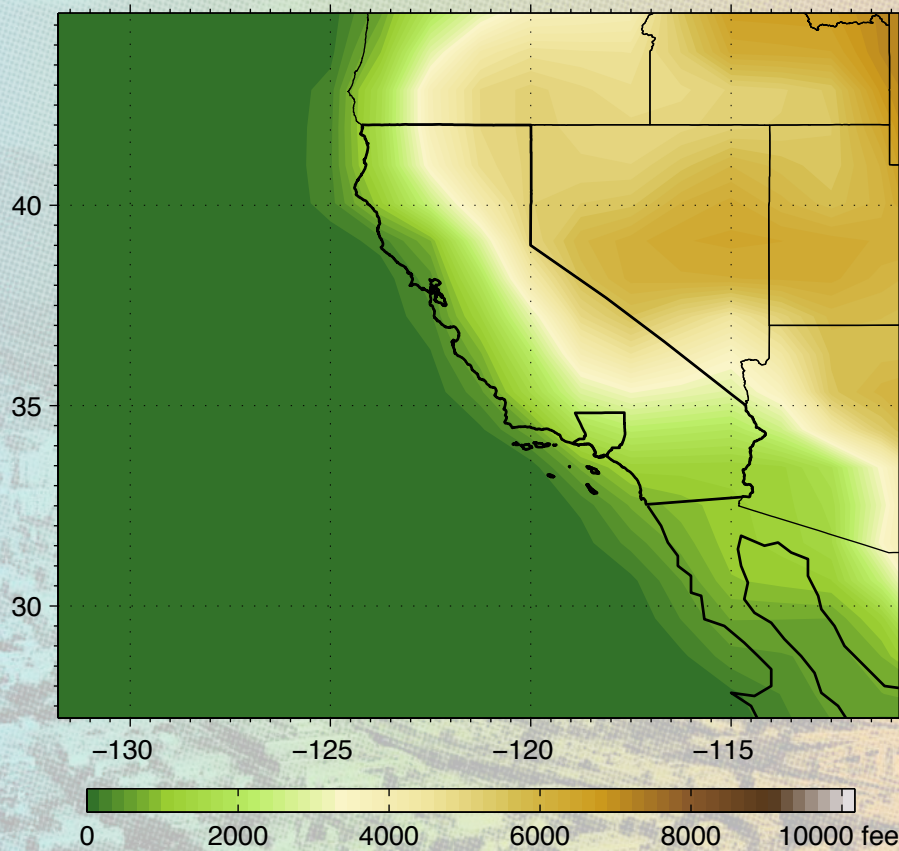




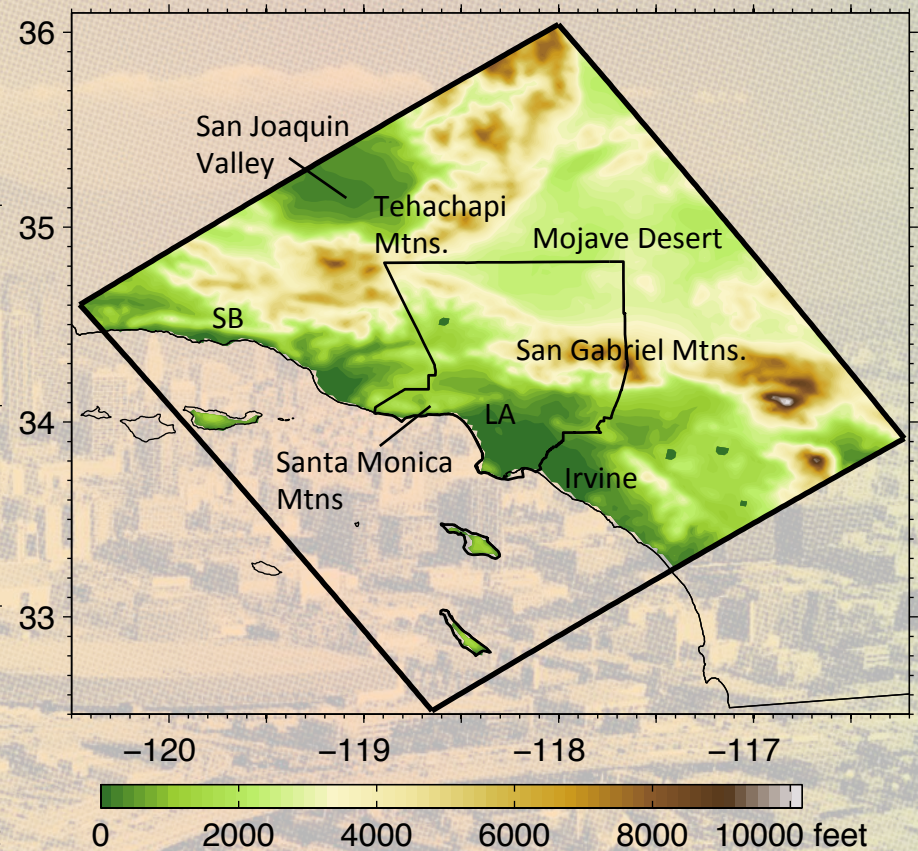


# L.A. Temperature • 2041-2060



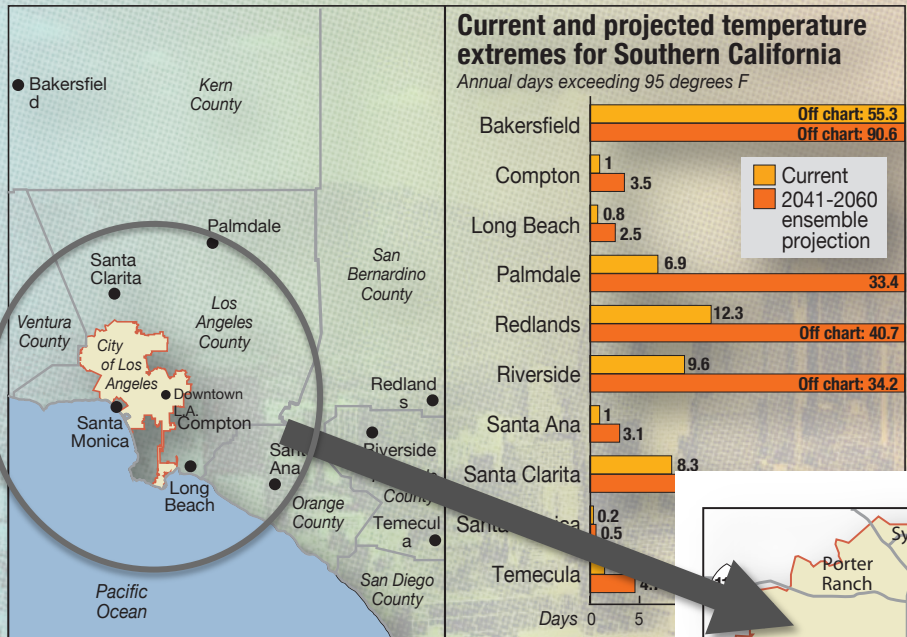


Topography from a typical global climate model (100-200 km)

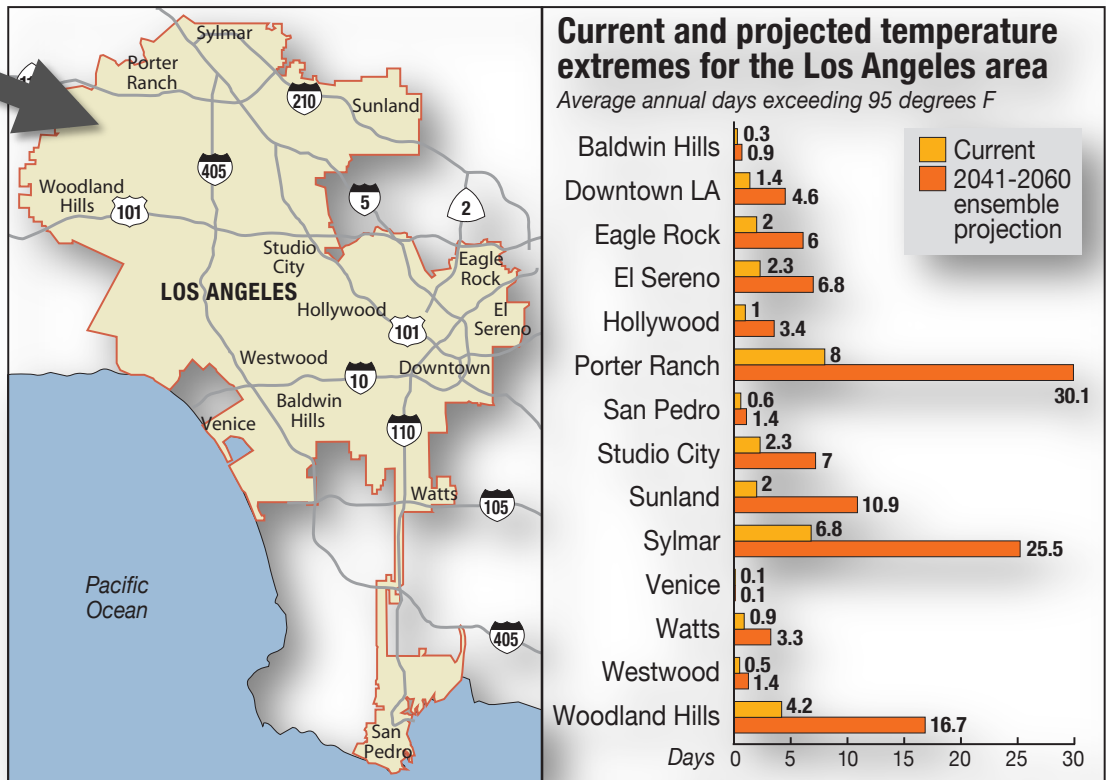


Topography and coastline are very well represented in the 2 km resolution innermost domain of the regional climate model





Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 19 climate models



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# Los Angeles Temperature, 2041-2060

- Coastal areas – 3-4°F increase
- San Fernando & San Gabriel valleys – 4-4.5°F increase
- Mountains and Deserts - 4.5-5.5° increase

## Extreme Heat Days

- Coastal areas – 3x
- Valleys – 4x
- Mountains and Deserts – 5x

# Extreme heat may affect

- Public health
- Air quality
- Food supply
- Energy demand (and supply too)
- Water supply
- Wildfire
- Property values
- Roads and rails

# No sweat! there are solutions to extreme heat

- Curb urban-heat-island-effect: 3-22°F (indoors)
- Cool roofs
- Cool pavement
- Trees & shade barriers
- Social resiliency: cooling centers

# Rain & Snow in Los Angeles







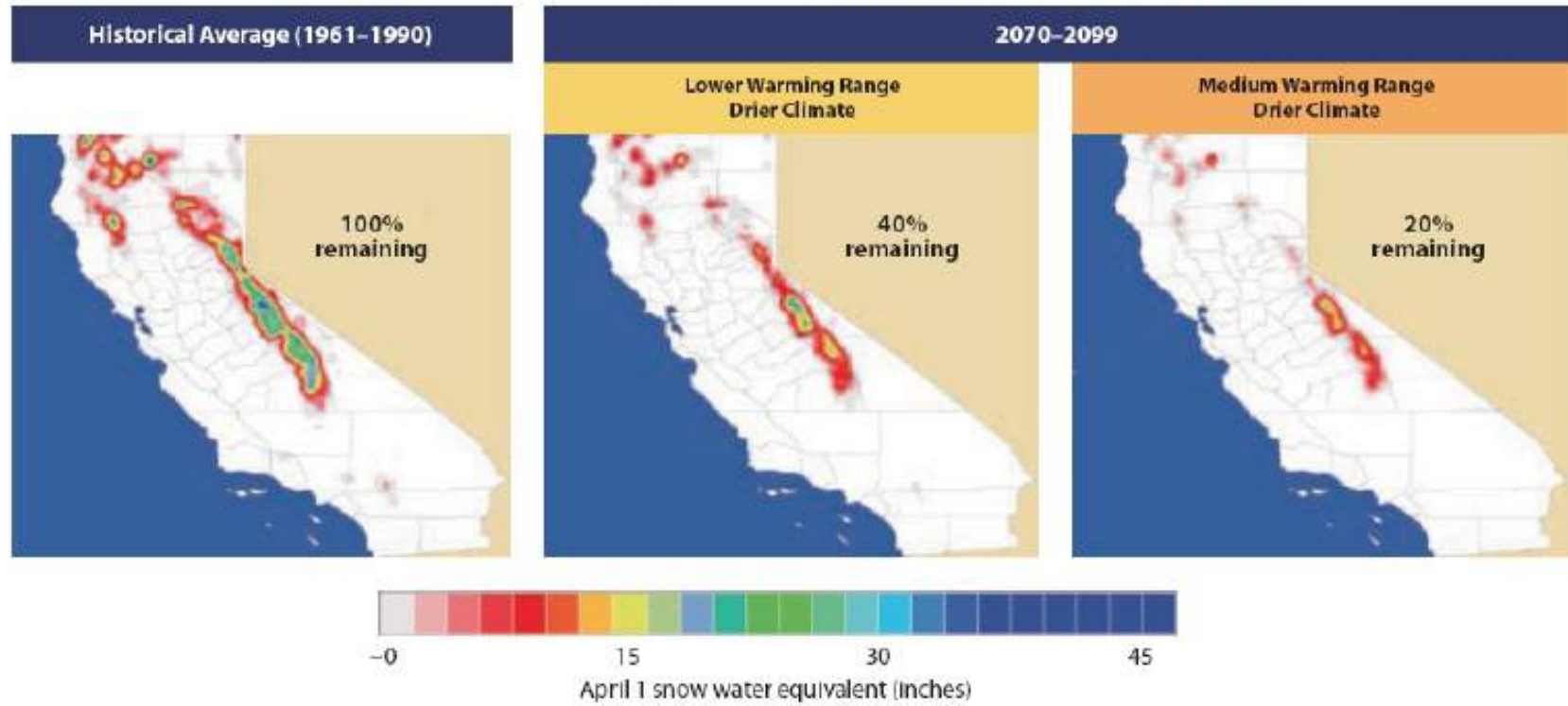






# Decreasing California Snowpack

*Snow pack acts as a natural reservoir for summer and fall water supply. Its capacity is projected to decrease significantly in a warmer climate.*

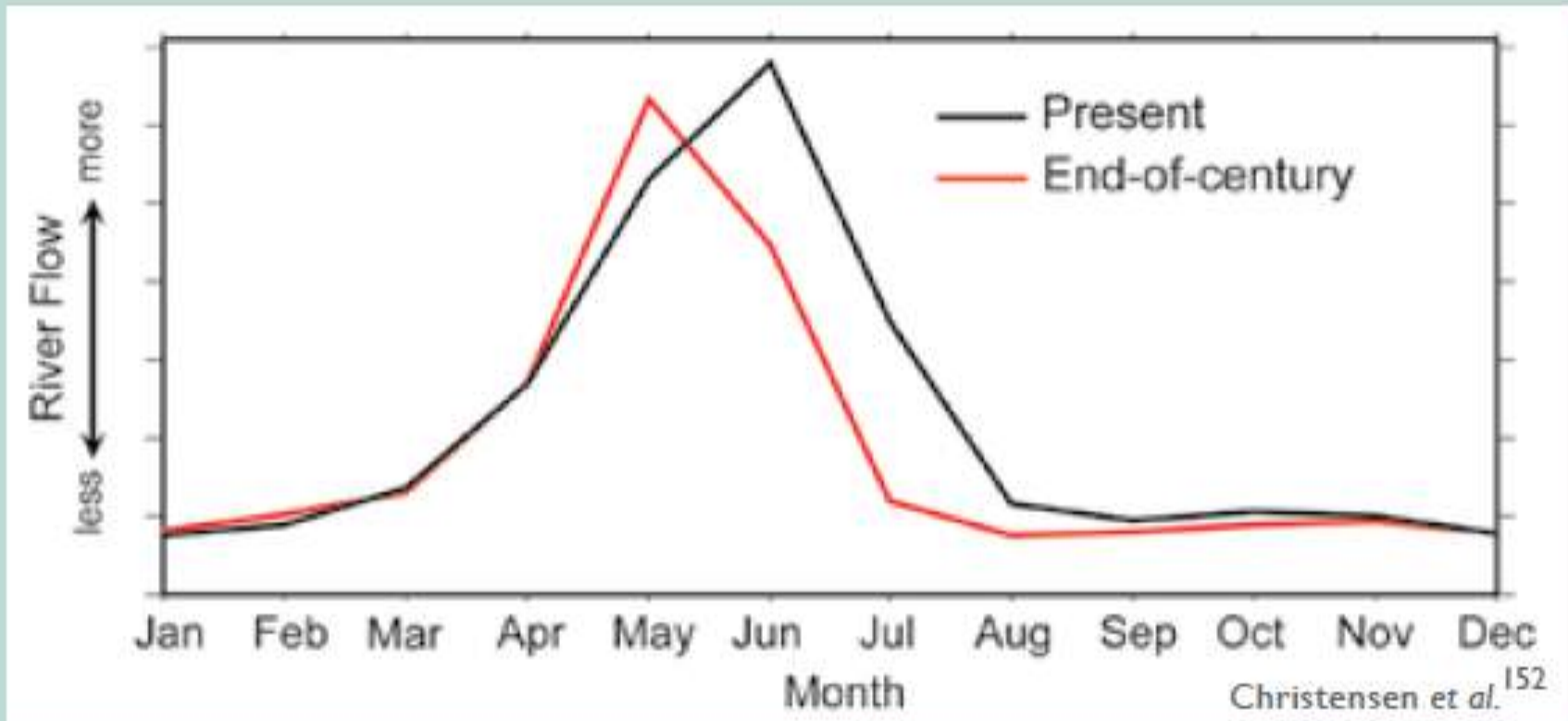




PREDICTED SNOWFALL IN 2050



## Simulated Changes in Annual Runoff Pattern



General schematic of changes in the annual pattern of runoff for snowmelt-dominated streams. Compared to the historical pattern, runoff peak is projected to shift to earlier in the spring and late summer flows are expected to be lower. The above example is for the Green River, which is part of the Colorado River watershed.

# Future Supply: Local Stormwater Prediction



**UCSD study:** *On average, the projections show little change in total annual precipitation in California. Furthermore, among several models, precipitation projections do not show a consistent trend during the next century. The Mediterranean seasonal precipitation pattern is expected to continue.*

**UCLA study:** *Coming January 2014. Downscale of 35+ GCMs indicates no change in precipitation.*

*How should policymakers react when they hear precip will stay the same?*

# Potential Precipitation/Snowfall Impacts

- Drought
- Flooding
- Water supply
- Energy generation

# Wind and Wildfire



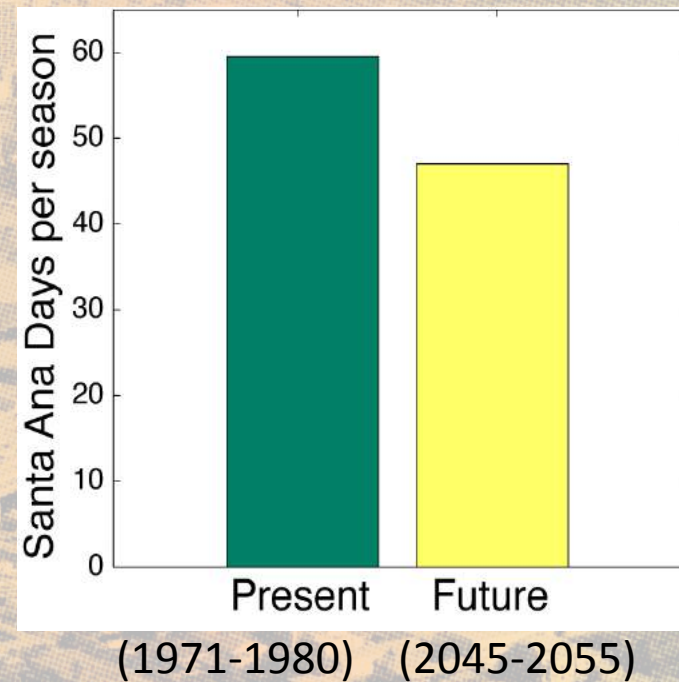






# Santa Anas in a Changed Climate

When we impose the conditions of a global future climate simulation of the regional model boundaries, we see a clear reduction in the number of Santa Ana days.



# Sea Level Rise and Storm Surges



# SLR & storm surges may affect:

- Operations at ports
- Supply chain
- Roadways
- Destruction of property
- Curtail tourism

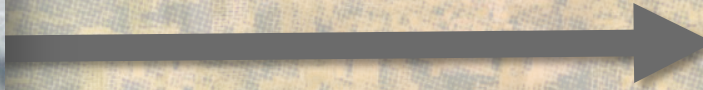


# SOLUTIONS





GLOBAL,  
ABSTRACT



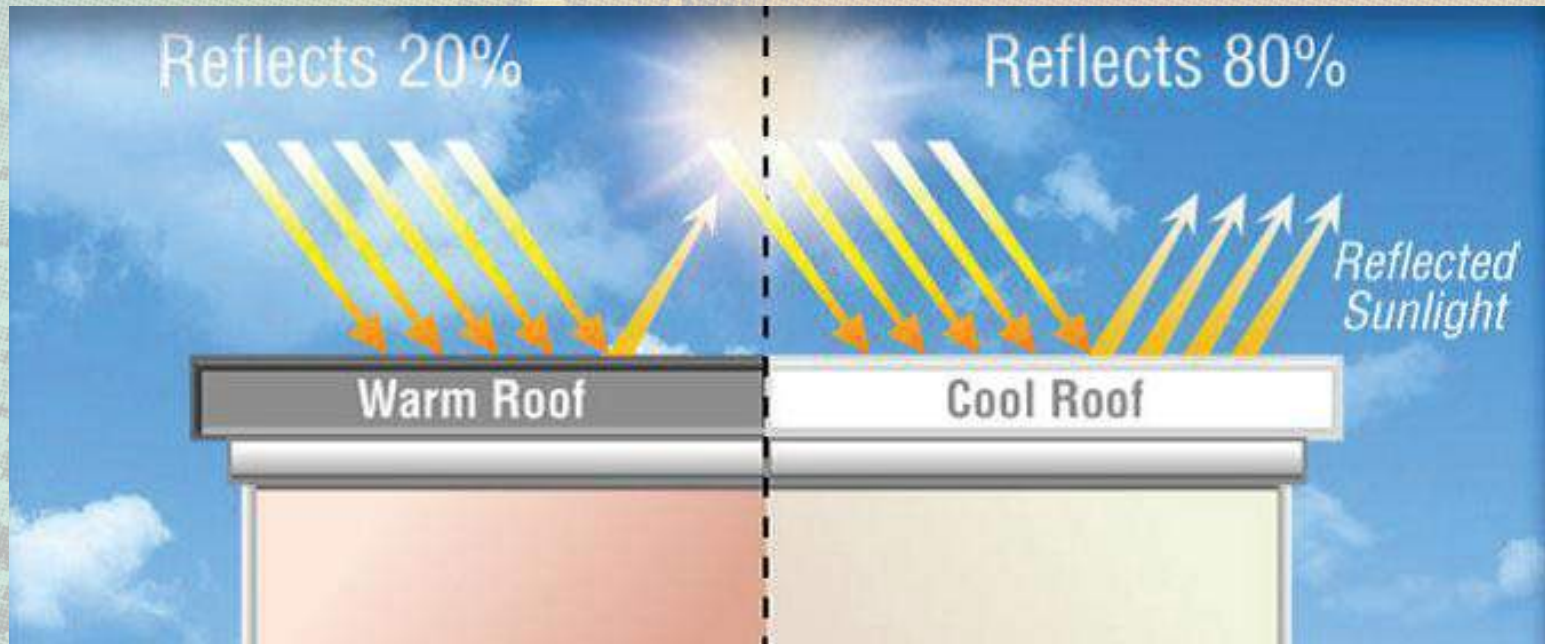
LOCAL,  
HUMAN



As a mother, I go beyond responsibility to love. I want a world with clean air and water, beauty and possibility for my daughter.

- Jennifer Grayson  
Huffington Post columnist

# Hot City, Cool Roofs



# Hot City, Cool Roofs





# Cool LA Campaign

Solutions that Meet the Climate Challenge

- Roofs constitute 20% of LA's landmass
- Solution: Cool Roofs
  - City of Los Angeles
    - ✓ LADWP incentive
    - ✓ City of Los Angeles ordinance
    - Coming: City of Pasadena, statewide

# Cool LA Campaign 2

## Cool Streets

- Streets constitute 40% of LA's landmass
  - City of Los Angeles: Streets for the Future coalition
    - First major city
    - Asphalt slurry
    - Other environmental services
      - Complete Streets
      - Green Streets
  - On Ballot: November 2014

# Cool LA Campaign 3

## Cooling Schools – Protecting Students

- Proposition 39
  - \$2 billion for energy efficiency for California schools
  - Energy efficiency decreases load, reducing incidence of power outages
  - California Energy Commission and California Department of Education are awarding allocations now

# Cool LA Campaign 4

## Modernize the Grid

- Electricity needed for cooling, and cooling is needed to survive heat waves
- State mandate: 33% renewable power by 2020
- New electrical grid and distribution system
  - Wildfire and transmission
  - Microgrids survive catastrophe
  - Microgrids can integrate more distributed generation (e.g., solar)
- Utilities are changing
  - Solar: prices coming down
  - Low-income left behind?



**Green outdoor space and community gardens at schools**



**El Sereno - Public Street Plaza near Food 4 Less**



## My Figueroa: Complete street improvements



## My Figueroa - Multi-Modal Connections





**Permeable street surfaces replenish ground water**



**LA River - "greening" of sections through Canoga Park**



**LA River: Terraced seating and native wildlife habitat**



**LA River - cantilevered greenway trail**



**Native plant landscaping to replace lawns**

# Broadous Elementary Before



# More infiltrators



# Broadous Elementary After







HOME LA CLIMATE STUDIES RESOURCES DO SOMETHING FUTURE POSSIBILITIES ABOUT



1 2 3 4 5

### WELCOME TO C-CHANGE.LA



**My family had to evacuate my grandmother from her home because of a wild fire. With longer fire seasons we need be prepared to take care of vulnerable people.**

- Elizabeth Willis  
Sustainability Manager, City of L.A.

This site is focused on climate science related to neighborhoods in the Los Angeles region. The most recent climate study detailing the temperature changes set to impact the Los Angeles region by mid-century can be explored and downloaded here.

The site also provides relevant information that might help to answer some of the first questions that come up about climate change.

Remember to register your email address with us to be notified when new studies are released and check back for upcoming personal narratives of how local Angelenos are creating change.



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